INDIAN CREEK

1999 Fish Management Report

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Greene and Lawrence Counties

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INTRODUCTION

Indian Creek originates in southwestern Monroe County and flows around 55 miles through Greene, Lawrence, and Martin Counties where it then empties into the East Fork of the White River. Indian Creek and its tributaries drain approximately 172 square miles of south-central Indiana (Andrews 1995). Fishing pressure is suspected to be low, mostly occurring in Greene and Lawrence Counties. Indian Creek is considered to be navigable for 15 river miles from its confluence with the East Fork to the Martin-Lawrence County line.

The fish population of Indian Creek in Lawrence County was sampled as part of a previous spear fishing study (Ball 1983). Upper Indian Creek in Monroe and Greene Counties was sampled by Aquatic Ecosystems in 1990. The fish community at two sites in the 15-mile stretch of lower Indian Creek in Martin County was sampled in 1994 (Andrews 1995). The middle stretch of Indian Creek was sampled to attain population estimates of game species in 1998 (Schoenung 1998).

The present survey was conducted June 20 - 22, 1999. The objective was to conduct a general fish community survey. Fish sampling effort consisted of four sites located on Indian Creek at river mile 27.8, 32.7, 38.2, and 44.5.

METHODS

Three stations were sampled in Greene County and one in Lawrence County. Sampling stations were chosen based on a previous game fish population evaluation survey (Schoenung 1999). Station lengths ranged from 605 to 633 ft. The sample area near river mile 27.8 had to be shifted upstream due to the absence of water.

Fish were collected with a pulsed DC barge electrofisher using a crew of two dippers and one barge operator. Sampling effort consisted of around 0.5 hours at each station. During all sampling, fish were collected, identified, measured to the nearest 0.1 inch, and weighed to the nearest 0.01 pound. Fish that could not be identified in the field were preserved in 10% formalin and later identified in the laboratory.

Dissolved oxygen, pH, and alkalinity were determined at each station using a Hach kit. Surface water and air temperatures were measured using a pocket thermometer. Water transparency was measured using a Secchi disk.

Stream width was measured at five transects per station. Across each transect three water depths were measured. Fish habitat at each station was subjectively evaluated using the qualitative habitat evaluation index (QHEI) developed by the Ohio EPA. A total score is assigned based on

individual component scores for substrate, instream cover, channel morphology, riparian zone, pool quality, riffle quality, and stream gradient.

RESULTS

Fisheries

Fish sampling effort produced 1,831 fish weighing a total of 158.27 pounds. Thirty species and one hybrid were collected and represented six families (Table 1). Longear sunfish were the most abundant in the collection by number (23.5%) followed by bluntnose minnow (19.8%), striped shiner (15.4%), black redhorse (12.6%), northern hog sucker (4.9%), rock bass (3.9%), greenside darter (2.7%), golden redhorse (2.0%), bigeye shiner (2.0%), central stoneroller (1.8%), emerald shiner (1.7%), creek chub (1.5%), smallmouth bass (1.5%), logperch (1.1%), and rainbow darter (1.0%). All other species comprised less than 5% of the sample by number. Black redhorse were the most abundant by weight (40.1%) followed by golden redhorse (15.9%), Northern hog sucker (12.0%), longear sunfish (10.7%), rock bass (6.6%), smallmouth bass (5.0%), striped shiner (3.6%), and spotted bass (1.1%). The remaining species comprised 5.2% of the sample by combined weight.

Carp and Minnow Family (Cyprinidae)

Members of this family comprised 42.8% of the total catch by number and 4.6% by weight. Cyprinidae was the most diverse family with eight species represented in the sample. Bluntnose minnow, striped shiner, and bigeye shiner were the three most numerous species in this family.

Sunfish Family (Centrarchidae)

Seven species and one hybrid were collected from this family. Members of this popular sport fish family combined for 30.3% of the catch by number and 24.4% by weight. A total of 28 smallmouth bass were collected. They ranged from 1.4 to 14.8 inches. Nine spotted bass were sampled with fish up to 12.5 inches collected. Only one 8.9 inch largemouth bass was collected.

Other species from this family which may offer some fishing opportunities include longear sunfish, rock bass, and green sunfish. Longear sunfish up to 6.0 inches and rock bass up to 8.7 inches were collected.

Sucker Family (Catostomidae)

Five species of this family were collected. Collectively they ranked third by number but first by weight. Two species of redhorse and three species of suckers were collected. The black redhorse alone contributed 40.1% of the total weight for all collected fish.

Table 1. Species, number, and weight of fish families collected from Indian Creek, Greene and Lawrence Counties, 1999.

Family		Number	%	Weight	%
Cyprinidae - carps and minnows		784	42.8	7.25	4.6
Bluntnose minnow	Creek chub				
Striped shiner	Rosyface shiner				
Bigeye shiner	Redfin shiner				
Central stoneroller	Emerald shiner				
Centrarchidae - sunfishes		555	30.3	38.55	24.4
Longear sunfish	Spotted bass				
Rock bass	Largemouth bass				
Smallmouth bass	Bluegill				
Green sunfish	Hybrid sunfish				
Catostomidae - suckers		364	19.9	110.41	69.8
Black redhorse	White sucker				
Northern hog sucker	Spotted sucker				
Golden redhorse					
Percidae - perches		108	5.9	0.88	0.6
Greenside darter	Logperch				
Johnny darter	Fantail darter				
Blackside darter	Rainbow darter				
Ictaluridae - bullhead catfishes		5	0.3	1.00	0.6
Yellow bullhead	Black bullhead				
Brindled madtom					
Cottidae - sculpins		15	0.8	0.18	0.1
Banded sculpin					
TOTALS		1,831		158.27	

Perch Family (Percidae)

This family is represented by five species of darters and one logperch. Combined there were 108 specimens sampled. No endangered darter species were collected.

Bullhead Catfish Family (Ictaluridae)

Three species comprised this family. Two yellow bullhead and one black bullhead were collected and ranged in length from 8.0 to 9.6 inches. One brindled madtom was collected at river mile 44.5.

Sculpin Family (Cottidae)

Fifteen banded sculpins were collected. Sculpin were sampled at all four sites.

Water Quality and Fish Habitat

The water quality data suggests that Indian Creek provides adequate living conditions for game fish. Although five parts per million (ppm) of oxygen is still acceptable for game fish survival, an oxygen depletion problem at river mile 32.7 may pose a threat to the fisheries' community (Table 2). Water levels at the time of sampling were low and movement of water was minimal. Water temperature at the time of the survey ranged from 77 to 82°F. The low water conditions coupled with an extended period of hot weather probably contributed to the low dissolved oxygen. Overall, water quality was satisfactory for a warmwater fishery.

Table 2. Surface water temperature, dissolved oxygen, and transparency at four stations on Indian Creek, 1999.

River Mile	Sampling Date	Temperature (F°)	Dissolved Oxygen (ppm)	Secchi Disk Transparency (in.)
27.8	7/22	82	7	30
32.7	7/21	80	5	36
38.2	7/20	82	7	31
44.5	7/20	77	8	32

The QHEI scores were fairly close for all four stations. The station at river mile 32.7 had the lowest score but that was primarily due to the predominance of muck and silt as the primary substrate type (Table 3). The channel morphology was also low and is likely the reason for the abundance of muck and silt. River mile 44.5 had the highest score. The width of the riparian zone and watershed type contributed to the high score.

Table 3. QHEI metric component scores of four stations on Indian Creek, 1999.

River Mile	Substrate	Instream Cover	Channel Morphology	Riparian Zone	Pool Quality	Riffle Quality	Gradient	Total Score
27.8	18	13	17	8.7	8	3	8	75.67
32.7	11	14	14	8.8	11	5	6	69.75
38.2	18	10	16	7	7	2	10	70
44.5	16	11	16	12	8	4	10	77

DISCUSSION

The upper Indian Creek harbors a diverse fish community which is dominated by nongame fish species. The species present are typical for a stream of this size. Small species of fishes such as minnows, shiners, and darters are typical residents of smaller streams. There did not appear to be a relationship between the number of species found at any site to the QHEI score or the river mile. There was an increase in the total weight of fish collected at the sites with the lower QHEI scores (RM 32.7 and 38.2). The increase in weight was primarily related to the total weight of sucker species collected.

Indian Creek is known to provide fair to good fishing opportunities in the middle and upper reaches of the stream (Andrews 1995). Rock bass and smallmouth bass are the two species that will provide the best fishing possibilities. Spotted bass and a few largemouth bass were collected but at their current size would only provide a limited catch and release resource. Other fish species that may provide harvestable fish are longear sunfish, suckers, and an occasional bullhead. Overall, the middle and upper stretches of Indian Creek should provide fair to good sport fishing opportunities.

LITERATURE CITED

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